

## CLAIMS

1. A regenerator for a wavelength division multiplex transmission system, including a demultiplexer adapted to separate the signals of various channels, a plurality of optical modulators each adapted to receive signals from the demultiplexer and a modulation clock from a clock distribution unit, and a multiplexer adapted to combine the signals modulated by said modulators, in which regenerator the clock distribution unit includes a reference clock and, for each modulator, means for synchronizing the phase of a copy of the reference clock with the signals applied to the modulator.
2. The regenerator of claim 1, wherein the phase synchronization means include a phase-locked loop for each modulator.
3. The regenerator of claim 2, wherein the phase-locked loop includes a phase shifter receiving a copy of the reference clock and supplying a modulation clock and the phase shifter is controlled in accordance with the average power of the output signals of the modulator.
4. The regenerator of claim 3, wherein the phase-locked loop includes a coupler adapted to sample a portion of the output signals of the modulator and a photodiode adapted to receive the signals from the coupler and to supply a voltage representative of the average power of the output signals of the modulator.
5. The regenerator of claim 4, wherein the phase shifter is controlled by a signal in accordance with the difference between said voltage and a reference voltage.
6. The regenerator of claim 5, wherein the reference voltage depends on the total power of the signals at the output of the regenerator.

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7. The regenerator of claim 5, wherein the reference voltage is remote-controlled.

8. The regenerator of claim 1, wherein the reference clock is supplied by a voltage-controlled oscillator.

5 9. The regenerator of claim 8, wherein the oscillator is controlled in accordance with the signals applied to the regenerator.

10 10. The regenerator of claim 8, including a coupler for sampling a portion of the input signals of the regenerator and a clock recovery circuit adapted to receive signals sampled by the coupler and to supply at its output a control signal for the oscillator.

11. A wavelength division multiplex transmission system including a regenerator according to claim 1.

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